134. Proposed by J. SCHEFFER, A. M., Hagerstown, Md.

To find the curve for which the sum of that part of the tangent, lying between the point of contact and the axis of abscissas, and the corresponding ordinate is constant $=c$, and which passes through the point (a, b).

*** Solutions of these problems should be sent to J. M. Colaw not later than August 10.

MECHANICS.

124. Proposed by J. SCHEFFER, A. M., Hagerstown, Md.

At one end of a weightless thread of length l is fastened a sphere of radius r, and the other end of the thread is fastened to a vertical axis. The axis is put into motion of constant angular velocity ϕ. What is the maximum angle which the thread will make with the vertical axis?

*** Solutions of this problem should be sent to B. F. Finkel not later than August 10.

DIOPHANTINE ANALYSIS.

87. Proposed by L. C. WALKER, Assistant Professor of Mathematics, Leland Stanford Jr. University, Palo Alto, Cal.

Find three numbers in arithmetical progression the sum of whose cubes is a cube.

88. Proposed by L. C. WALKER, Assistant Professor of Mathematics, Leland Stanford Jr. University, Palo Alto, Cal.

Find three square numbers in harmonical progression.

*** Solutions of these problems should be sent to J. M. Colaw not later than August 10.

AVERAGE AND PROBABILITY.

110. Proposed by G. B. M. ZERR, A. M., Ph. D., Professor of Chemistry and Physics, The Temple College, Philadelphia, Pa.

Find the average area of the triangle formed by joining three random points taken on the surface of a regular hexagon, two on one side of a diagonal and the third on the other side.

111. Proposed by L. C. WALKER, Assistant Professor of Mathematics, Leland Stanford Jr. University, Palo Alto, Cal.

If a radius be drawn at random in a given semi-circle, and a point taken at random in one of the sectors formed, show that the chance that a random line drawn through the point will cut the arc of the sector is

$$1-\frac{1}{\pi^2}\log 2.$$

112. Proposed by L. C. WALKER, Assistant Professor of Mathematics, Leland Stanford Jr. University, Palo Alto, Cal.

Two circles are drawn at random, both in magnitude and position, but so as to lie wholly upon the surface of a given circle. Show that the chance of their both resting on the same diameter of the given circle is

$$\frac{4}{\pi}(8\log 2-5).$$

*** Solutions of these problems should be sent to B. F. Finkel not later than August 10.